the polygon mirror **16***a* is constant, the scanning angle is proportional to the rotation time, and therefore the information about the scanning angle is obtainable by measuring the elapsed time from the start of optical scanning.

[**0051**] Then, the comparator **33***a* compares the output of the amplifier **32***a* with the threshold value Ref supplied from the MPU **5**, and outputs "1" if the output of the amplifier **32***a* is not smaller than the threshold value, or outputs "0" if the output of the amplifier **32***a* is smaller than the threshold value. The first timer **34***a* measures the duration of the "1" output and the "0" output from this comparator **33***a*, and outputs the result of the measurement to the MPU **5**.

[**0052**] Next, the following description will explain the operation of calculating the position and size of the indicator S by the optical scanning-type touch panel of the present invention. **FIG. 5** is a schematic diagram showing a state of implementing the optical scanning-type touch panel. In **FIG. 5**, however, the illustration of the constituent members other than the light send/receive units **1***a*, **1***b*, recurrence reflection sheet **7** and display screen **10** is omitted. Further, **FIG. 5** shows the case where a finger is used as the indicator S.

[**0053**] The MPU **5** controls the polygon controller **4** to rotate the polygon mirrors **16***a* and **16***b* in the light send/receive units **1***a* and **1***b*, and thereby angularly scanning the laser beams from the light emitting elements **11***a* and **11***b*. As a result, the reflected light from the recurrence reflection sheet **7** enters the light receiving elements **13***a* and **13***b*. The amounts of the received light that entered the light receiving elements **13***a* and **13***b* as mentioned above are obtained as the light receiving signals which are the outputs of the light receiving signal detectors **3***a* and **3***b*.

[**0054**] Further, in **FIG. 5**, θ00 and φ00 represent the angles from a reference line connecting both of the light send/receive units **1***a* and **1***b* to the light receiving elements **13***a* and **13***b*, θ0 and φ0 represent the angles from the reference line connecting both of the light send/receive units **1***a* and **1***b* to the ends of the recurrence reflection sheet **7**, θ1 and φ1 represent the angles from the reference line to one end of the indicator S on the reference line side, and θ2 and φ2 represent the angles from the reference line to another end of the indicator S on the opposite side to the reference side, respectively.

[**0055**] **FIG. 6**(*a*) shows a waveform of a light receiving signal of the light receiving element **13***a* and a waveform of the threshold value Ref in the comparator **33***a* when the indicator S is not present, while **FIG. 6**(*b*) shows a waveform of a comparative output signal given by the comparator **33***a* at this time. Note that the same waveforms are produced for the light send/receive unit **1***b*.

[**0056**] When the scanning angle is θ00 (φ00), the light receiving element **13***a* (**13***b*) directly receives the light from the light emitting element **11***a* (**11***b*). This state is detected as the timing of changing the output signal of the comparator **38***a* from "0" to "1", and further the cycle thereof is measured by the second timer **39***a*. Accordingly, since the MPU **5** can monitor the rotation cycle of the polygon mirror **16***a* (**16***b*), it corrects the rotation of the pulse motor **21** that rotates the polygon mirror **16***a* (**16***b*), if necessary, by controlling the polygon controller **4**. Moreover, the second timer **39***a* measures the elapsed time from the start of optical scanning. The MPU **5** determines a threshold value Ref used in the comparator **33***a* according to this elapsed time.

[**0057**] Further, when the polygon mirror **16***a* (**16***b*) is a four-face regular polygon as in the present embodiment, the polygon mirror **16***a* (**16***b*) makes ¼ rotation in one cycle of measurement by the second timer **39***a*.

[**0058**] When the indicator S is not present in the optical path of the scanning light, in the timing of θ00 (φ00) shown in **FIG. 6**(*a*), following the direct incidence on the light receiving element **13***a* (**13***b*), the reflected light from the recurrence reflection sheet **7** enters the light receiving elements **13***a* (**13***b*). As shown in **FIG. 6**(*a*), the amount of the reflected light from the recurrence reflection sheet **7** becomes maximum at the first angle of θ0 (φ0) because of the reception of the reflected light from the nearest portion of the recurrence reflection sheet **7**, and thereafter the amount of the reflected light decreases gradually, becomes minimum once at a corner portion in a diagonal direction, which is a farthest portion of the recurrence reflection sheet **7**, and then increases gradually and becomes minimum at an angle of 90° to complete one cycle of scanning.

[**0059**] Moreover, the threshold value Ref becomes maximum at a small scanning angle (just after starting optical scanning) at which there is a high possibility that a part of the laser beam emitted from the light emitting element **11***a* (**11***b*) directly enters the light receiving element **13***a* (**13***b*), and decreases as the scanning angle becomes smaller, i.e., as the elapsed time from the start of optical scanning becomes longer.

[**0060**] By the way, when a threshold value Ref is set in the comparator **33***a* as mentioned above, the MPU **5** inputs the result of the measurement performed by the first timer **34***a* for measuring the time during which an output signal of the comparator **33***a* is "1", i.e., the level of an input signal to the comparator **33***a* is not less than the threshold value Ref. When the device is in normal conditions, an output "1" of a relatively short time caused by the directly incident light on the light receiving element **13***a* and an output "1" of a relatively long time caused by the reflected light from the recurrence reflection sheet **7** are obtained as the output signals of the comparator **33***a*. However, since the output "1" of a relatively short time caused by the directly incident light on the light receiving element **13***a* is synchronous with the measuring cycle of the second timer **39***a*, as shown in **FIG. 6**(*b*), the MPU **5** stores in the RAM **26** only the duration of the output "1" of a relatively long time caused by the reflected light from the recurrence reflection sheet **7** as the measured time.

[**0061**] **FIG. 7**(*a*) shows a waveform of a light receiving signal of the light receiving element **13***a* and a waveform of the threshold value Ref in the comparator **33***a* when the indicator S is present, while **FIG. 7**(*b*) shows a waveform of a comparative output signal of the comparator **33***a* at this time. Note that the same waveforms are produced for the light send/receive unit **1***b*.

[**0062**] When the indicator S is present in the optical path of the scanning light on the display screen **10**, the light beams projected from the light send/receive units **1***a* and **1***b* and then reflected from the indicator S do not enter the light receiving elements **13***a* and **13***b*. Therefore, in a state as shown in **FIG. 5**, the reflected light does not enter the light receiving element **13***a* when the scanning angle is in the range between 0° and θ0, the reflected light enters the light receiving element **13***a* when the scanning angle is in the